

position and number of the sensoriae on the funicle segments of the female, and until more material comes to hand from further rearings, it is not possible to be sure about their specific identity with *G. taylori* new species.

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THE PRESUMED LARVA OF HIMALOPSYCHE PHRYGANEA (ROSS)

(Trichoptera: Rhyacophilidae)

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The subfamily Rhyacophilinae of the Rhyacophilidae contains two distinct genera, *Rhyacophila* and *Himalopsyche*. The validity of a third described genus, *Philocrena*, known only from larvae collected in the Caucasus, is difficult to assess in the absence of adults. The large genus *Rhyacophila* contains at least 250 species, of which 90 are found in North America. The genus *Himalopsyche* contains only 24 species with but one, *phryganea* (Ross), known to occur in the Nearctic Region. A complete taxonomic, biogeographic and phylogenetic treatment of the subfamily may be found in Ross (1956).

The larvae of the many species of *Rhyacophila* that have been described are a rather heterogeneous group. Because of the rather inaccessible central Asian range of most species of *Himalopsyche*, very few larvae in this genus are known. Lepneva (1945) described the larvae of two Asian species, *gigantea* (Martynov) and species "larva hoplura." Tsuda (1948) described the larva of *japonica* (Martynov) which is apparently the same as that described by Iwata (1928) under the name of *R. formosae* Iwata (see Ulmer 1957:127).

During some recent work on *Rhyacophila* larvae, a singular larva from Oregon was found in the Cornell collection. The length of this specimen, 32 mm., immediately eliminated all known Nearctic rhyacophiline species except *phryganea*. There are also a number of important similarities between this larva and those

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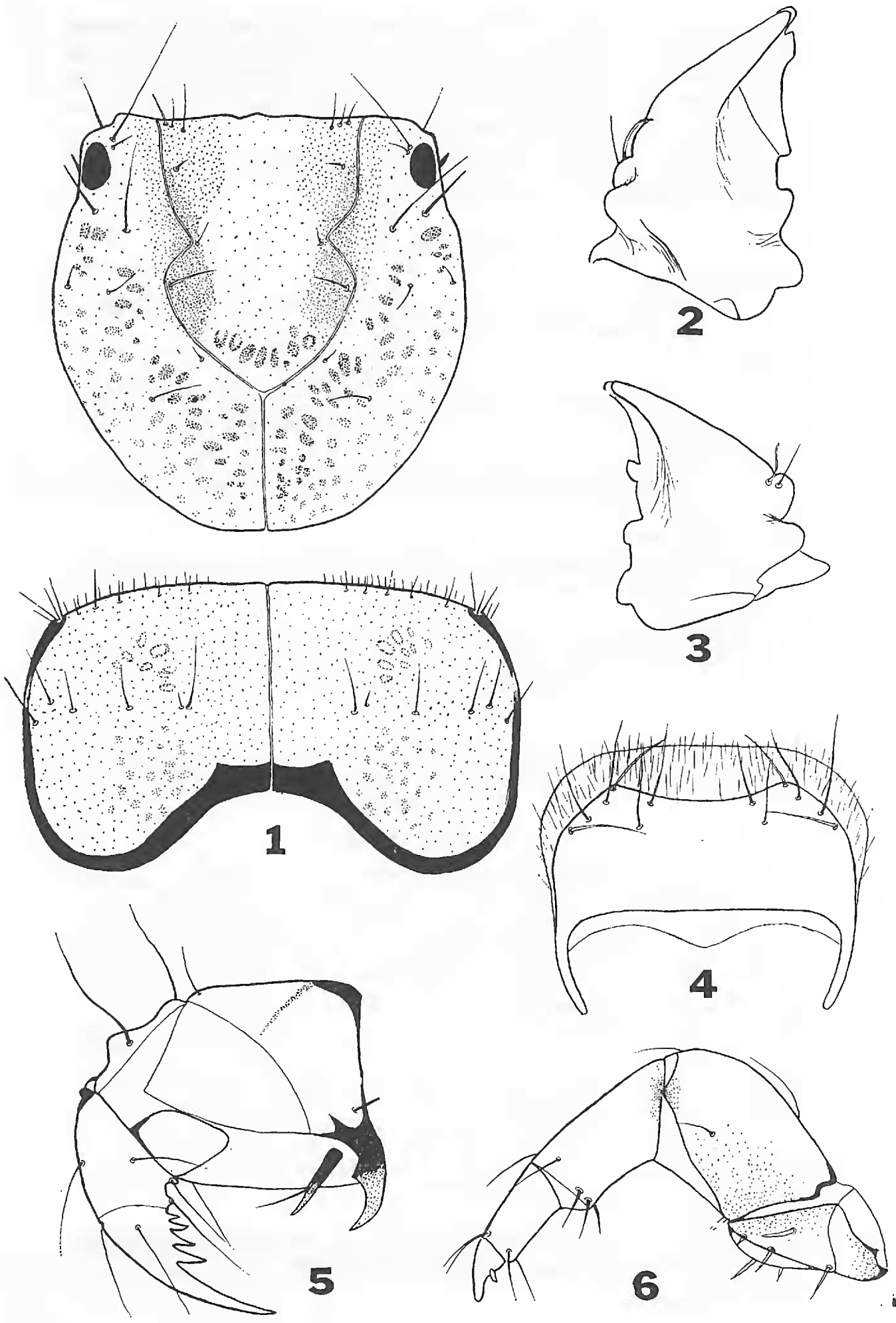
of *gigantea* and species "hoplura"—a large size; shape, structure setal pattern, and coloration of the head; structure of the labrum, mandibles, and maxillary palpi; shape of the pronotum; structure and setal pattern of the legs; and structure of the anal prolegs. The larva of *H. japonica* is also in agreement insofar as the structures are figured. The main difference is in the structure of the gills. In *gigantea*, species "hoplura" and *japonica*, a long conical projection is borne laterally on each segment from the mesothorax to the eighth abdominal segment; the shorter gill filaments are borne dorsally on these projections. In *phryganea* there is no trace of the conical projections. This character, however, is probably of no generic importance, as the larvae of the various species of *Rhyacophila* may either have no gills, a single pair of gills per segment, or a branching cluster of gills on each segment. For these reasons the larva is considered to be that of *Himalopsyche*, and since *phryganea* is known from Oregon, it is probably this species.

It is difficult at this time to give any distinctive morphological characters that will separate the larvae of the genus *Himalopsyche* from those of *Rhyacophila*. However, in the Nearctic Region the two genera may be separated by the large size and great number of gill filaments in each cluster in the genus *Himalopsyche*.

Larva: Length 32 mm., width 6 mm. *Head*: Red-brown dorsally with infuscations anteriorly and darker muscle scars posteriorly, paler ventrally. Dorsal surface rugose, especially anteriorly; setae as in figure 1. Mandibles and labrum as in figures 2-4; maxillo-labium inrolled and contorted, but maxillary palpi short, with second segment subequal to the first. *Thorax*: Pronotum and legs red-brown with blackish markings. All legs nearly identical in shape and setae pattern (fig 6). Meso- and metanota each with a large linear area of gill filaments antero-laterally; each area with about 100 filaments arising independently from the surface; a single, club-shaped filament arising laterally at the base of the middle and hind legs. The meso- and metanota each with a pair of long setae posteriorly, each with several shorter setae near its base; a shorter pair of setae anteriorly on each segment. *Abdomen*: Segments 1-8 each with a slightly raised lateral area bearing 50-100 individual gill filaments. Each segment bearing two pairs of long setae postero-dorsally and one shorter pair anteriorly; ventrally having one pair of long setae mesally (lacking on first segment?) and another pair

EXPLANATION OF FIGURES

Fig. 1, head and pronotum, dorsal; fig. 2, left mandible; fig. 3, right mandible; fig. 4, labrum dorsal; fig. 5, anal proleg, lateral; fig. 6, foreleg, anterior surface.



of shorter setae laterally. (Many abdominal setae broken off.) Segments 3–7 each with a small, oval, scabrous patch ventro-mesally. Ninth tergite badly deformed in this specimen. Ninth segment ventrally with three pairs of setae, the central pair shortest, lateral pair longest. Anal sclerites and claws red-brown, marked with black (fig. 5).

Material examined.—Oregon: Klamath Falls, Feb. 15, 1941 (Betten collection, Cornell University).

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TWO PARASITES OF *HYLEPHILA PHYLEUS* DRURY IN ARIZONA

(Lepidoptera: Hesperiidæ)

The skipper, *Hylephila phyleus* Drury, is a well-known pest of bermudagrass in California. An infestation of these larvae was observed on a Tiffine bermudagrass green at Randolph Park Golf Course, Tucson, Arizona, on September 28, 1960. A braconid wasp, *Apanteles hesperidivorus* Viereck, (determined by C. F. W. Muesebeck) was observed ovipositing in a larva. Several adult *A. hesperidivorus* were reared from other larvae. Tachinid flies, *Plagioprospherysa parvipalpis* (Van der Wulp) determined by H. J. Reinhard) were very abundant. Several skipper larvae were collected with single white flattened eggs, which developed into flies. This species is represented in the University of Arizona Insect Collection by specimens collected in the central and south-eastern parts of Arizona.—GEORGE D. BUTLER, JR., *University of Arizona, Tucson*.